

VI. National Weather Service Billings

NOTE: This information describes the Billings Fire Weather support for the Northern Rockies Geographic Area. While most of the information is the same for the Rocky Mountain Area support, there are a few important changes, especially for Red Flag Criteria. Please refer to the Rocky Mountain Area operation plan for Billings Fire Weather support to portions of northern Wyoming.

A. Location

The National Weather Service office in Billings, Montana is located in the Homestead Business Park on the west end of Billings. The mailing address is:

National Weather Service
2170 Overland Avenue
Billings, MT 59102-6455

B. Important Numbers

NWS Billings Office: (406) 652-0851

Internet (Primary) <http://www.wrh.noaa.gov/Billings>

Billings home page

Internet (Alternate) <http://www.boi.noaa.gov/firewx.htm>

Boise home page

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C. Hours and staffing

The National Weather Service office in Billings, Montana is staffed 24 hours a day with meteorologists to handle Fire Weather requests. Additional staff are usually available during normal business hours enabling multiple requests to be handled in a timely manner. The office has 1 certified Incident Meteorologist who is available for onsite support to large wildfires, prescribed fires, and other major incidents.

D. Forecast Seasons

The Billings Fire Weather District season begins with Smoke Management forecasting in late March or early April ending in November. The Brown-to-Green up period generally begins in late March or early April and lasts into May and June, mainly for Prescribed fire activity. The active fire season typically lasts from July through October. The post season prescribed activity generally begins in October and lasts to around Thanksgiving. All dates are flexible and are determined by need with coordination with land management agencies.

E. Routine Product Issuance Times (Typical dates)

Early spring thru June	Mornings	Daily	0700
July thru September	Mornings	Daily	0700
	Afternoons	Daily	1500 - 1530
October thru November	Mornings	Daily	0700

F. Forecast Services

Fire Weather Forecasts, site specific Spot Forecasts, Red Flag Warnings, and Fire Weather Watches will generally follow the format as defined in part **III. Basic Fire Weather Forecast Services** of the Northern Rockies Annual Operating Plan. These products are issued on a routine basis through the season.

Smoke Dispersion information will be included on the Spring and Fall morning forecast, generally March through June, and in the fall from October through the end of November. This information will be identified in the forecast as mixing depth and mixing winds

Non-routine or unscheduled products may be issued at any time as weather conditions can and do change rapidly. The various affected dispatch offices in the Billings Fire Weather district will be alerted by telephone should this need occur.

The formats are listed in part III of the Annual Operating Plan and these are basic formats. Variations in Spot Forecasts can be requested by asking that the product include your specific requested information. For example: adding extended forecasts and dispersion information.

G. Red Flag Criteria

One, or a combination of the following conditions, in conjunction with High, Very High, or Extreme Fire Dangers, will be considered for Red Flag events.

1. Scattered dry thunderstorms or increased thunderstorm activity, wet or dry, during an extremely dry period.
2. A combination of low RH's and increasing strong or gusty surface winds, or abrupt change in direction due to the approach and passage of a cold front, squall line, or other weather phenomena other than isolated thunderstorms. See the Red Flag Decision Chart.
3. Anytime the forecaster foresees a change in weather that would result in a significant increase in fire danger.

Red Flag Decision Chart

Billings Forecasters utilize a Red Flag Decision Chart as a "first look" at the need for a Red for a Red Flag Warning based on increasing wind and low RH. Typically Red Flag Warnings are issued when fire danger is rated "HIGH" or greater. However, there may be exceptions. This chart is by no means an absolute. Winds are sustained 10-minute average (RAWS).

		RED FLAG DECISION CHART							
		RELATIVE HUMIDITY							
		40%	35%	30%	25%	20%	15%	10%	5%
WIND MPH	5	NO	NO	NO	NO	Poss	Poss	Prob	YES
	10	NO	NO	NO	Poss	Poss	Prob	YES	YES
	15	NO	NO	Poss	Poss	Prob	YES	YES	YES
	20	NO	Poss	Poss	Prob	YES	YES	YES	YES
	25	Poss	Poss	Prob	YES	YES	YES	YES	YES
	30	Poss	Prob	YES	YES	YES	YES	YES	YES

Example Red Flag Warning:

RED FLAG WARNING
NATIONAL WEATHER SERVICE BILLINGS MT
414 AM MDT FRI AUG 22 2003

...A RED FLAG WARNING HAS BEEN ISSUED FOR TODAY FOR MONTANA FIRE WEATHER ZONES 123 THROUGH 127 FOR WIDELY SCATTERED THUNDERSTORMS...A SIGNIFICANT WIND SHIFT WITH COLD FRONTAL PASSAGE...AND LOW RELATIVE HUMIDITIES...

THE RED FLAG WARNING INCLUDES THE FOLLOWING COUNTIES
IN MONTANA: GALLATIN...PARK...SWEETGRASS...STILLWATER...
CARBON...WHEATLAND...GOLDEN VALLEY...MUSSELSHELL.

A DISTURBANCE WILL MOVE THROUGH THE WESTERN ZONES THIS MORNING PRODUCING WIDELY SCATTERED THUNDERSTORMS. THE THUNDERSTORMS WILL BE BOTH WET AND DRY. ADDITIONAL THUNDERSTORMS WILL DEVELOP THIS AFTERNOON AS A SECOND DISTURBANCE MOVES INTO THE AREA AND A COLD FRONT APPROACHES FROM THE WEST. THESE STORMS ARE EXPECTED TO BE MAINLY DRY AND COULD PRODUCE WIND GUSTS UP TO 40 MPH. MINIMUM RELATIVE HUMIDITIES WILL BE NEAR 20 PERCENT THIS AFTERNOON. THE COLD FRONT WILL CROSS THE AREA THIS EVENING CAUSING WINDS TO SHIFT TO THE WEST AND BRINGING SCATTERED SHOWERS AND THUNDERSTORMS.

THE COMBINATION OF POSSIBLE DRY LIGHTNING...LOW RELATIVE HUMIDITIES...POSSIBLE GUSTY WINDS WITH THUNDERSTORMS...AND A WIND SHIFT WITH A COLD FRONTAL PASSAGE HAS PROMPTED A RED FLAG WARNING FOR TODAY

H. NFDRS Forecasts

The NWS Billings Office will provide numerical forecasts in support of the National Fire Danger Rating System (NFDRS) on a daily basis beginning around July 1 and continuing until the end of wildfire season. Product format is covered in the common section of the Annual Operation Plan.

Afternoon observations (1400 MDT) should be sent from the field to WIMS by 1415 MDT. These observations will generally be received in the Forecast Office by 1445 MDT. The forecasts will then be sent to WIMS by 1600 MDT. Forecasted NFDRS indicies should be available by 1615 MDT. These forecasts are for expected conditions 24 hours from the current day's observation (1400 MDT tomorrow).

For the 2003 Season, the following RAWs will be used for NFDRS forecasts:

Zone 123 Shenango, Yellowmule, Derby Mountain
Zone 125 Fishtail
Zone 126 Timbercrest and Britton Springs
Zone 128 Soda Springs
Zone 129 Big Horn Mountain, Pryor Mountain, Wolf Mountain
Zone 131 Badger Peak and Fort Howes
Zone 132 Knowlton
Zone 133 Camp Crook and Cannonball Creek.
Zone 287 Burgess Junction

Zones 124, 127, and 130 at this time do not have locations for NFDRS forecasts.

I. Agencies Served

The Billings National Weather Service Office serves a diverse variety of Federal and State users in Montana, a small portion of northwest South Dakota and north central Wyoming. They include:

1. United States Forest Service

Custer National Forest
Gallatin National Forest
Big Horn National Forest (WY)

2. Bureau of Land Management

Miles City (MT)

3. Bureau of Indian Affairs (Reservations)

Crow Northern Cheyenne

4. National Wildlife Refuges

Lake Mason

Hailstone

Halfbreed

5. National Park Service

Big Horn Canyon National Recreation Area

Little Big Horn National Battlefield

6. Wilderness Areas

Lee Metcalf

Absaroka Beartooth

7. State of Montana Department of Natural Resources

Department of State Lands

Eastern Land Office

J. Fire Weather District

The Billings Fire Weather District covers Region 1 Zones 123 through 133 and Region 2 Zone 284 (Big Horn National Forest). This covers most of the southern half of Montana, Harding County in western South Dakota, and portions of North Central Wyoming.

K. Forecast Zone Descriptions

Zone 123:

South Central Montana includes all the Gallatin National Forest, Lee Metcalf Wilderness Lands, Butte District of the BLM, and Montana state lands. The area starts at the point where Montana, Idaho, and the Yellowstone National Park share a common point south of West Yellowstone, Montana, then north along the western portion of the Gallatin National Forest, including the Lee Metcalf Wilderness, through Bozeman, and north along the forest boundary to Sixteen Mile Creek along the Meagher and Gallatin County border, then east along the Meagher, Gallatin and Park county border, then around the Crazy Mountain portion of the Gallatin National Forest boundary to the Sweet Grass County border, then south to the Gallatin Forest boundary, then east and south along the Gallatin and Custer National Forests boundaries to the Montana and Wyoming state border, then west to the Yellowstone National Park boundary, then following the Yellowstone National Park boundary to the beginning point south of West Yellowstone, Montana.

Zone 124:

South Central Montana including portions of the Miles City District of the BLM, and Montana state lands. The area consists of Wheatland Sweet Grass counties in Montana, excluding portions of the Gallatin National Forest and the Lewis and Clark National Forest within those counties.

Zone 125:

South Central Montana including portions of the Miles City District BLM, Montana state lands, the Hailstone National Wildlife Refuge, and the Halfbreed Lake National Wildlife Refuge. The area is bounded on all sides by the Stillwater county in Montana, excluding that portion of the Custer National Forest within Stillwater County.

Zone 126:

South Central Montana area that includes portions of the Custer National Forest, Miles City District of the BLM, and Montana state lands. This area begins where the Western boundary of the Custer National Forest, Beartooth Ranger District, intersects the Montana State border east of Cooke City, Montana near Mt. Rearguard, then follow the boundary between the Gallatin and Custer National Forests north around the Custer National Forest boundary to the Carbon County border, then follow the county border between Carbon, Stillwater, and Yellowstone counties east to the Crow Indian Reservation, then south and east along this border to the Big Horn Canyon National Recreation Area, then south along the western boundary of the Big Horn Canyon Recreation Area to the Montana state border, then west along the state border to the initial point.

Zone 127:

South Central Montana area that includes Miles City District of the BLM, Montana state lands, and Lake Mason National Recreation Refuge area. The area is bounded by the county borders of Golden Valley and Musselshell Counties and excludes portions of the Musselshell Ranger district of the Lewis and Clark National Forest in northern Golden Valley county.

Zone 128:

South Central Montana area includes portions of the Miles City District of the BLM, and Montana state lands. The area is defined as that portion of Big Horn County north of the Crow Indian Reservation, and Yellowstone County excluding that portion of the Crow Indian Reservation within Yellowstone County.

Zone 129:

South Central Montana area that includes the Crow Indian Reservation in Montana and the entire Big Horn Canyon National Recreation area in Montana and Northern Wyoming. The area begins at the point where the Montana State border and Crow Indian Reservation coincide North of Sheridan, Wyoming, then follows the border of the Crow Indian Reservation North, West and South to the Carbon County border, then south to the eastern border between the Crow Indian Reservation and the Pryor mountain portion of the Custer National Forest, then east to the Big Horn Canyon National Recreation Area, then south along the western boundary of the Big Horn Canyon Recreation Area boundary to the Montana state border, then west along the state border to U.S. Highway 310, then south to U.S. Highway 14a, then east along this highway to the western border of the Big Horn Canyon Recreation Area, around the southern border of the Recreation area back to U.S. Highway 14a, then north along the eastern border of the Recreation area to the Montana state border, then east back to the initial point.

Zone 130:

Southeastern Montana including portions of the Miles City District of the BLM, and Montana state lands. The area begins where the Yellowstone River enters Treasure county, then north along the Treasure county border to the Rosebud county border, then follow the Rosebud county border to where the Yellowstone River exits Rosebud county, then west along the middle of the Yellowstone River to where the Yellowstone River enters Treasure county.

Zone 131:

Southeastern Montana including the Northern Cheyenne Indian Reservation, Ashland Ranger District of the Custer National Forest, portions of the Miles City District of the BLM, and Montana state lands. The area begins where the Yellowstone River enters Treasure county, then east along the middle of the Yellowstone River to the Custer county border, then south and east along the Custer county border to the Carter county border, then south along the Carter county border to the Montana state border with Wyoming, then west along the Montana/Wyoming border to the southeast corner of the Crow Indian Reservation, then north along the eastern border of the Crow Indian Reservation to the northern border of the Northern Cheyenne Indian Reservation, then east along the Northern Cheyenne Indian Reservation to the Rosebud county border, then north along the Rosebud county border to the Treasure county border, then north along the Treasure county border to where the Yellowstone River enters Treasure county.

Zone 132:

Southeastern Montana including portions of the Miles City District of the BLM, and Montana state lands within Custer County, Montana.

Zone 133:

Southeastern Montana and a portion of northwestern South Dakota including the Sioux Ranger District of the Custer National Forest and portions of the Miles City District of the BLM, and state lands in both Montana and South Dakota. The area boundary consists of Fallon and Carter counties in Montana, and Harding county in northwestern South Dakota.

Zone 284:

Area consists of the entire Big Horn National Forest in Wyoming.

L. List of Reference RAWS Stations by Fire Weather Zone: (This list may be subject to change, please check periodically for updates.)

Zone	Station	WIMS #	County	Deg Lat	Min Long	Elev	Site	Aspect
123	Squaw Creek	244601	Gallatin	4527	11113	5425	Valley	NW-SW
123	Hebgen Lake	244603	Gallatin	4440	11106	6667	Valley	SW-E
123	Yellow Mule	244606	Gallatin	4510	11121	9200	Ridge	Flat
123	Four Mile	244705	Park	4520	11013	5700	Valley	Flat
123	Derby Mtn	244803	Sweetgrass	4535	10951	7200	Ridge	SE
125	Fish Tail	244902	Stillwater	4527	10934	4800	Valley	SW-NE
126	South Bridger	245604	Carbon	4512	10848	4725	Slope	SE
126	Timbercrest	245607	Carbon	4509	10922	6559	Valley	E-W
128	Soda Spring	245001	Yellowstone	4543	10823	4020	Slope	SW
129	Pryor Mtn	245106	Big Horn MT	4521	10830	6160	Ridge	
129	Big Horn Mtn	245107	Big Horn MT	4506	10754	7280	Ridge	
129	Wolf Mtn	245105	Big Horn MT	4519	10710	4930	Ridge	
129	Little Big Horn	245108	Big Horn MT	4534	10726	3400	Ridge	E
129	Britton Springs	245109	Big Horn WY	4500	10821	2860	Valley	Flat
129	Hillsboro		Big Horn MT	4510	10821	3986	Valley	Flat
131	Fort Howes	245201	Powder River	4518	10610	3380	Valley	W-E
131	Bradshaw Crk	245203	Powder River	4505	10556	3950	Ridge	
131	Badger Peak	243902	Rosebud	4538	10630	4340	Ridge	
132	Knowlton	244102	Custer	4618	10501	3340	Ridge	
133	Camp Crook	390101	Harding SD	4553	10359	3120	Valley	N-S
133	Cannonball Cr	244301	Fallon	4629	10404	2935	Ridge	
Zone	Station	WIMS #	County	Deg Lat	Min Long	Elev	Site	Aspect
284	Mill Creek	480306	Big Horn WY	4427	10727	8930	Ridge	S
284	Burgess	480403	Sheridan WY	4447	10732	7880	Valley	SW
284	Boyd Ridge	480404	Sheridan WY	4457	10743	7740	Ridge	SE
284	Leigh Creek	480906	Washaki WY	4407	10714	8402	Slope	S
284	School House	481002	Johnson WY	4418	10659	8080	Ridge	S